



Halogenated Organic Species over the Tropical Rainforest

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Long-lived halogenated carbon compounds are important contributors to stratospheric ozone loss, and the most persistent anthropogenic ones are controlled by the Montreal Protocol. Of the shorter-lived halocarbons, methyl chloride (CH_3Cl) and methyl bromide (CH_3Br) are the most abundant chlorine and bromine containing gases in the troposphere, and a fraction may reach the stratosphere. CH_3Cl contributes up to 15% of the tropospheric organic chlorine, CH_3Br up to about 50% of the organic bromine. Since they are of great importance to ozone, their sources and sinks should be well understood. However, inverse model studies suggest a missing source of methyl chloride located in the tropics. Recent studies indicate that CH_3Cl and to a lesser extent CH_3Br are emitted by tropical ecosystems.

This poster presents airborne measurements of the organohalogen species methyl chloride, methyl bromide and chloroform. The data were collected during the GABRIEL campaign over the rainforests of Suriname and French Guyana ($3\text{-}6^\circ \text{ N}$, $51\text{-}59^\circ \text{ W}$) during the long dry season (October) 2005. Air samples were collected in pressurized canisters and analyzed within 24 h by GC-MS.

Maritime air masses, initially low in forest hydrocarbons, are advected over the forest with southeasterly trade winds in the boundary layer and thereby accumulate primary organic emissions. The longitudinal distributions of these species have been analyzed and fluxes from the rainforest ecosystem are determined for CH_3Cl and CHCl_3 - being $10.0 \mu\text{g m}^{-2} \text{ h}^{-1}$ and $0.335 \mu\text{g m}^{-2} \text{ h}^{-1}$, respectively. For the calculation a boundary layer height of 1500 m was assumed. No significant flux from the rainforest was observed for CH_3Br .

The fluxes of methyl chloride and chloroform are in good agreement with a flux measured over the same region in the short dry season (March) during the LBA Claire 1998 project. This suggests that the rainforest is a continuous source of methyl chloride throughout the year.